

Food Content of TV Shows Seen by Children in Peru: A Double Dose of Food Messages?

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The public health community generally agrees that TV exposure influences children's cognitions and behaviors. Research on TV's influence on children's eating habits has mainly analyzed advertisements aired during TV programs for children and how they influence children's food preferences and practices. Yet little is known about the food messages children encounter in the content of their favorite programs. Most previous studies may have underestimated children's total exposure by failing to take food exposures within programming into account. The current study addresses this by examining the amount and characteristics of food content appearing in commercials and the content of shows seen by children in Peru. Using a sample of children's TV programs and the ads run during the programs' commercial breaks, it was found that overall, 17% of all commercials in the sample were for food and beverages, and 28% of all the program content included food items such as water, fruit, snacks, or prepared meals. Overall, children in Peru seem to be exposed to TV messages about food and beverages that mostly should be consumed only sparingly.

Keywords: TV, content analysis, advertising, food, snacks, sugary drinks, children, Peru

Introduction

Televised content influences children's food choices and preferences and, as a consequence, children increase their food intake, especially of unhealthy foods, which increases their likelihood of becoming overweight or obese (Jordan & Robinson, 2008; Robinson, 1999). Systematic reviews (Hastings et al., 2003; McGinnis, Gootman, & Kraak, 2006) point to advertising as the major source of TV influence,

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as ads intentionally promote food products to influence children's cognitions and behaviors. But TV commercials are not the only source of influence. Watching TV also exposes children to another type of content: the content of the shows. If TV shows too include references to or depictions of foods and eating, children could be exposed to a "double dose" of messages about food.

Research on advertisements has identified the proportion of food and beverage ads during children's programming (Guran et al., 2010; Kelly et al., 2010) and the types of food products most commonly advertised on TV (Powell, Szczypka, & Chaloupka, 2010). It has drawn attention to the nutritious quality of advertised foods (Kelly et al., 2010; Powell, Schermbeck, Szczypka, Chaloupka, & Braunschweig, 2011; Powell, Szczypka, Chaloupka, & Braunschweig, 2007), the persuasive techniques used in the food ads (Boyland, Harrold, Kirkham, & Halford, 2012; Folta, Goldberg, Economos, Bell, & Meltzer, 2006; Fosu, Wicks, Warren, & Wicks, 2012; Warren, Wicks, LeBlanc Wicks, Fosu, & Chung, 2008), and the most common locales or demographic attributes of the characters appearing in the ads (Gilmore & Jordan, 2012). Overall, experimental and observational studies have consistently found that exposure to food advertising influences children's unhealthy eating behaviors (e.g., Andreyeva, Kelly, & Harris, 2011; Harris, Bargh, & Brownell, 2009; Parvanta et al., 2010; Wiecha et al., 2006).

In contrast, there is little evidence about the food-related messages children receive from the content of their favorite programs. Theory suggests that children model the behaviors of characters seen on television, especially when those characters are rewarded for their actions (Bandura, 2004). Research about the effect of narratives suggests individuals are likely to be persuaded by a message inserted in a story line, either because children become involved with, and identify with, a character in a program (in line with Entertainment-Education; see Singhal, Sharma, Papa, & Witte, 2004), or because they are transported by the stories portrayed in the narrative (Green & Brock, 2000; Kreuter et al., 2007). Research outside the domain of food has focused on the nature of messages on violence, sex, or general health that appear in story lines of programs a target audience is likely to watch (Hether & Murphy, 2010; Manganello & Blake, 2010; Manganello, Franzini, & Jordan, 2008; Manganello et al., 2010).

Thus, televised content may expose children to a double dose of messages involving food: they may be intentionally persuaded by ads and unintentionally influenced by representations of food in the stories of their favorite shows. The goal of this exploratory study was to (a) identify how much food content appears in the TV programs and advertisements seen by Peruvian children, and (b) characterize that content in terms of persuasion and eating behaviors. Examining food advertising in non-U.S. settings is valuable in understanding the growing worldwide trend toward childhood obesity.

Literature Review

Research on the TV content watched by children has centered mostly on analyzing advertisements running at times when children are most likely to be watching TV (e.g., Folta et al., 2006; Fosu et al., 2012; Gilmore & Jordan, 2012; Guran et al., 2010; Kelly et al., 2010; Powell et al., 2007; Warren et al., 2008). For example, Guran et al. (2010) found that food ads made up 32.1% of the total sample of commercials aired on four national Turkish TV channels. Similarly, after examining 1,037 TV commercials collected from U.S. children's programming, run during 123 shows on public and cable channels, Gilmore and Jordan (2012) found that 22% of the sample consisted of food and beverage ads.

Moreover, Warren and colleagues (2008) examined the most frequently advertised products in food-related commercials and found that almost three quarters of 4,324 analyzed ads concerned five categories: pizza or fast food, sweets, breakfast foods, family restaurants, and convenience entrees or meals.

Kelly et al. (2010) attempted one of the most comprehensive characterizations of food content in advertisements across countries. In a large sample of TV ads coded by 13 research groups located in 11 different countries across Australia, Asia, Western Europe, and North and South America, Kelly and colleagues (2010) found that 18% were food-related.

Few studies have characterized the food advertisements in Latin America. In Peru, for example, only one study has examined TV advertising during programs directed at children and those seen by adolescents aged 11 to 17 (CONCORTV, 2012). This governmental report found that 13% of the ads, aired over the summer of 2011, were for food and beverages, and that almost two thirds of the food ads were for unhealthy food items (CONCORTV, 2012).

When analyzing commercials, researchers assess the quality of the promoted food products advertised on TV according to their nutritional content (e.g., Powell et al., 2011; Powell et al., 2007). The argument is that most food advertisements run during children's or adolescents' programming involve non-nutritious foods, raising public health concerns (Powell et al., 2010; Powell et al., 2011). For example, using ratings from Nielsen Media Research, Powell et al. (2011) found that whereas exposure to food and beverage items high in sugar, saturated fat, or sodium declined from 2003 to 2009 in the United States, exposure to fast-food products increased over the six-year period.

The public health concern is more pronounced when research uncovers the persuasive techniques used in the advertising of food products (Boyland et al., 2012, Folta et al., 2006; Fosu et al., 2012; Warren et al., 2008). Advertising relies on strategies likely to influence children by getting their attention (Warren et al., 2008) or persuading them (Folta et al., 2006). Communicating to children that eating a specific food item may lead to happiness, for example, is particularly worrisome when the item is an unhealthy food or beverage (Fosu et al., 2012), or when children are unaware of an ad's persuasive intent, as is the case for children under the age of eight (Kelly, Smith, King, Flood, & Bauman, 2007). Research in the United Kingdom found that fun, taste, and a premium or contest were the most frequent primary appeals for products advertised to children (Boyland et al., 2012). In fact, fun, the most frequent primary appeal, was used in at least half of the food ads targeted at children (Boyland et al., 2012). Research in the United States has identified several techniques for emphasizing either the attributes of the products or the emotional appeals that appear most often on food ads (Fosu et al., 2012; Warren et al., 2008). For example, using a large sample of food commercials collected from U.S. children's programming involving six TV networks and five cable networks, Warren et al. (2008) found the five most frequent appeals: taste or flavor, mood alterations, nutritional content, new and value for money.

A Double Dose of Food Messages?

Messages inserted in stories or narratives are likely to persuade audiences (Singhal & Rogers, 2004). Entertainment-Education research has well documented the impact of health messages delivered

through entertainment vehicles such as *telenovelas* (Poindexter, 2004) or radio soap-operas (Rogers et al., 1999). The underlying reasons for the effect are explained by several psychological principles (Sood, Menard, & Witte, 2004), including social modeling as proposed by social cognitive theory (Bandura, 2004): In the process of observational learning, children are more likely to model the behaviors of their parents or their peers when they see rewards resulting from those behaviors (Baranowski, Perry, & Parcel, 2002). Social modeling can occur through exposure to the media (Bandura, 2004).

But not only social modeling explains the potential persuasive effect of messages inserted in stories. Research on narratives suggests that individuals are likely to be persuaded by a message in a narrative via the process of transportation (Green & Brock, 2002). Research in cancer communication, for example, suggests that being transported into the imagery of stories decreases an individual's ability to counter-argue messages that would otherwise be resisted (Kreuter et al., 2007). When TV content conveys a meta-message that a behavior is prevalent, individuals may perceive high levels of normative pressure to engage in that behavior (see Bleakley, Hennessy, Fishbein, & Jordan, 2011, for the influence of sex content in the media on adolescents' perceived normative pressure to have sex). This argument is in line with cultivation theory, which suggests that heavy TV viewing may lead to a biased perception of social reality (Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002). Thus, a high level of food presence on children's TV programs is likely to convey a message of high prevalence that may ultimately affect children's cognitions.

In the context of TV, children are exposed to the content of their favorite programs and are likely to become involved with these shows' stories and characters (Sood et al., 2004). The stories may carry images of food or of individuals engaging in eating behaviors. When children watch their favorite character obtaining a benefit or reward from eating a snack or drinking soda, they are likely to model that behavior (Bandura, 2004).

The literature on content analysis of media regarding messages about violence, sex, or health is well established (Collins, Elliott, & Miu, 2009; Kunkel et al., 2003; Manganello & Blake, 2010; Murphy, Wilkin, Cody, & Huang, 2009), but very little research has examined the presence of food content on TV programs seen by children (for exceptions, see Greenberg, Rosaen, Worrell, Salmon, & Volkman, 2009; Scully et al., 2014). One open question in the health literature is whether the presence of food can also predominate in the content of TV shows, especially those that children are most likely to watch.

Overall it is known that TV food advertisements targeting children tend to promote mainly unhealthy food items and negatively impact children's dietary health, but the food items and eating behaviors depicted on TV shows are unknown. Thus, it is yet unclear whether these depictions influence children's health positively or negatively. Perhaps scholars should be concerned about food content in TV programs as well as advertisements, as the literature discussed above suggests that both could affect children's dietary health: Children may be intentionally persuaded by food advertisements and unintentionally influenced by representations of food appearing in the stories of their favorite TV shows. Thus, the purpose of this study was to explore whether the content that Peruvian children watch on TV features a double dose of food messages.

The TV Effects Research Project

Obesity rates in Peru are high: 8% of children under the age of five and 24% between the ages of five and nine are overweight or obese (Álvarez-Dongo, Sánchez-Abanto, Gómez-Guizado, & Tarqui-Mamani, 2012). Obesity has several causes (Crothers, Kehle, Bray, & Theodore, 2009), and exposure to TV content is one (Hastings et al., 2003; McGinnis et al., 2006). Understanding the food content that Peruvian children find on TV is therefore relevant, especially if reducing children's exposure to TV can decrease obesity (Robinson, 1999).

The TV Effects Research Project is a three-year investigation aimed at identifying patterns of TV viewing and eating behaviors, as well as the link between exposure to TV advertising of food and the eating behaviors of Peruvian children aged 7 to 11. Formative research (Busse & Díaz, 2014) found that children watch nearly 5 hours of TV on a weekday and about 7 hours during a weekend day. Focus groups revealed that children recall food products that are advertised on TV, request food items seen on TV, and are themselves able to buy the items, which often are sodas, other sugary drinks, and sweet or salty snacks. Regarding TV programs, this initial phase of the project found that boys and girls reported different top favorite shows.

As research about the types of food commercials appearing on Peruvian TV is scarce and the use of persuasive appeals in food and beverage ads targeting children is well known, this exploratory study proposed the following research questions in the context of Peru:

- RQ1: What is the amount of food advertisements during TV programs watched by children?*
- RQ2: What are the most frequent types of food advertisements during TV programs watched by children?*
- RQ3: What are the most frequent appeals used in food advertisements during TV programs watched by children?*

Given the limits of knowledge about the food messages inserted in the content of TV programs viewed by children, social cognitive theory's claim that children model behaviors portrayed on TV, and research on narratives, the following research questions were also posed:

- RQ4: What is the amount of food-related content in TV programs watched by children?*
- RQ5: What are the most frequent types of food appearing in TV programs watched by children?*
- RQ6: Overall, to what extent are eating behaviors portrayed in TV programs watched by children?*

Methods

Sample

This study's data come from a sample of programs that children aged 7 to 11 are most likely to watch on TV. Formative research relying on focus groups and interviews, conducted with 38 boys and girls and their parents from five primary public schools in Lima, Peru's capital, identified this age group's favored programs and typical viewing patterns (Busse & Díaz, 2014).

Because Boyland, Harrold, Kirkham, and Halford (2011) found significant differences in the amount of food advertising at different times of the year, programs were recorded at three time points representing three different seasons of the year. Within each season, programs were recorded over a period of two weeks:

Spring: Programs aired during the school season in December 2012

Summer: Programs aired outside of the school season in February 2013

Winter: Programs aired during the school season in June 2013

Recording across different seasons allowed for controlling for variations in the content due to specific changes in the advertising landscape. For example, food companies may promote specific items like sugary drinks or sodas more in the summer than in winter (Boyland et al., 2011).

A total of 25 programs were recorded. They aired on public and cable TV channels, and were popular among the children of the formative research. Because of inconsistencies between the programming schedule in the TV guide and the programs actually broadcast, a few of the coded shows were not among the most popular programs as indicated by the formative research; however, they were included in the sample because the date and time of their broadcast were exactly the same as those of the selected popular show. Further, three episodes were coded for some shows but only two or one for others, because some programs did not run during one season. This sample represents the actual programs and episodes that children aged 7 to 11 were most likely to watch during the selected three seasons. Overall, the total amount of time of the sample was 1,941.9 minutes, representing 32 hours, 21 minutes and 54 seconds of coded material. Table 1 lists the programs and the episodes coded for each season:

Table 1. Programs Coded.

TV Programs	Spring	Summer	Winter	Overall
A todo ritmo	x	x	x	3
Al fondo hay sitio	x		x	2
Austin y ally		x		1
Ben 10 omniverse	x	x	x	3
Bob esponja	x	x	x	3
Buena suerte Charlie			x	1
Combate	x		x	2
El chavo del 8	x		x	2
Esto es guerra	x	x	x	3
Hannah montana	x	x	x	3
Hora de aventura	x	x		2
Kick buttowski	x	x	x	3
Kid vs kat	x	x	x	3
La pandilla de la pantera rosa	x			1
Los padrinos mágicos	x	x	x	3
Mi niñera es una vampira	x			1
Pecezuelos			x	1
Phineas y ferb	x	x	x	3
Pokemon	x			1
Programa de talentos			x	1
Rojo fama contrafama		x		1
Travieso vs. Bueno	x			1
Un show más	x	x	x	3
Vacaciones en Grecia		x		1
Yo soy			x	1
TOTAL PROGRAMS	18	14	17	25

Note. Numbers in the Overall column refer to the number of episodes coded for the respective program.

The above episodes were recorded in time slots when children were most likely to watch TV: Monday to Thursday from 6:00 p.m. to 11:00 p.m., Friday from 2:00 p.m. to 11:00 p.m., and Saturday and Sunday from 8:00 a.m. to 6:00 p.m.

Coding Procedure

Two research assistants were trained to code the content of the commercials and the programs. They coded only the advertisements appearing during the commercial breaks in each program—ads before and after the shows were not coded. The coding instruments (codebook and coding sheet) for the

advertisements were developed based on prior research (Folta et al., 2006; Fosu et al., 2012; Gilmore & Jordan, 2012; Warren et al., 2008). The unit of analysis was the advertisement. Each TV ad was classified as one of five types: foods and beverages, toys and games, program promotions, public service announcements (PSAs), and others. Each food and beverage ad was then classified as one of 15 types: dairy, meat, bread/pasta, breakfast fast food, fruit and vegetables, salty snacks, sweets, fast foods, convenience foods, nonalcoholic beverages, alcoholic beverages, water, restaurants, supermarkets, and others. Coders identified only the most prominent food type per ad, and in the cases of dairy and meat, the products could be shown either unprocessed (e.g., lean cuts of meat) or processed (e.g., processed yogurt in small bottles). Following Warren et al. (2008), persuasive appeals were classified as comprising two types: product appeals stressing the attributes inherent to the product, and emotional appeals. There were 8 types of product appeals—competitiveness/uniqueness, premium offers, newness, quantity/size, flavor/taste/smell/texture, nutritional content, convenience, and value for money—and 10 types of emotional appeals: mood alterations, health/well-being, speed/strength, achievement/enablement, action/adventure, magic/fantasy, peer acceptance/superiority, adult approval/disapproval, appearance, and trickery/deceit; any other type of appeal was categorized as other. As in Warren et al. (2008), coders were instructed to detect up to three of these appeals in each advertisement.

The coding instruments for the program content were original and developed especially for this study. The unit of analysis for coding the content of the programs was a 30-second slot. These slots were first classified as either showing a food item or not: coders were instructed to detect food, whether it appeared as a single product such as a can of soda, or as a group of products such as several dishes and drinks on a dining table. Then, the slots showing food were coded as including one or more of the following six food categories: water, soda, sugary drink, fruit, snack, and other types of food (i.e., anything else: milk, meat, rice, spaghetti, etc.). Formative research revealed that children eat between meals and select sweet and salty snacks as well as fruit; they also drink sodas and sugary drinks (Busse & Díaz, 2014). Thus, coders were instructed to code only for these specific items in the content of the program. Water was included to allow comparison between the presence of water and that of sodas and sugary drinks in the content of the programs. Finally, the slots with any food item were coded for exhibiting an eating behavior—that is, an animated or real-life character eating any type of food product—or not.

To assess reliability, Cohen's kappa was used for the categorical variables and Spearman's rho for the ratio variables. The coding procedure involved dual-coding 100% of the data. Reliability scores for most variables were very good to excellent. For the advertisements, reliability scores were: type of ads (Cohen's kappa = .97) and food product of the ads (Cohen's kappa = .98). For the content of the programs, reliability scores were: food presence in the slot (Cohen's kappa = .93); food type in the slot (Spearman's rho for water = .89, soda = .85, sugary drink = .92, fruit = .91, snack = .91, other = .92); and presence of a character engaging in an eating behavior (Spearman's rho = .91). Product and emotional appeals in the advertisements were captured using the instrument developed by Warren et al. (2008). Fosu et al. (2012) reported good reliability scores for all these appeals. This study was unable to replicate their results, mostly because of the infrequent presence of certain appeals—quantity/size, convenience, speed/strength, magic/fantasy, adult approval/disapproval, and trickery/deceit—so these six appeals were excluded from the analysis. Good reliability scores were obtained for the remaining 13 appeals (Spearman's rho for competitiveness/uniqueness = .79, premium offers = .91, newness = .93,

flavor/taste/smell/texture = .76, nutritional content = .90, value for money = .93, mood alterations = .73, health/well-being = .91, achievement/enabement = .82, action/adventure = 1.00, peer acceptance/superiority = .81, appearance = .89, other appeals = .70).

Results

The following results address each of the research questions using the overall sample of episodes, as well as the sample from each season, of the 25 programs. The first research question aimed to identify the amount of food advertisements within TV programs watched by children. Of the total number of 1,016 ads, 16.73% ($n = 170$) were food and beverage ads, 14.86% ($n = 151$) were toy and game ads, 19.39% ($n = 197$) were program promotion ads, 1.38% ($n = 14$) were PSAs, and 47.64% ($n = 484$) were for other types of products (e.g., banks or insurance companies). There were thus about 5.25 food and beverage advertisements per hour of broadcast. Table 2 shows the types of ads for each of the seasons as well as overall.

Table 2. Types of Advertisements.

Type of ad	Spring % (N)	Summer % (N)	Winter % (N)	Overall % (N)	χ^2
Food/Beverage	12.31 (48)	20.41 (50)	18.90 (72)	16.73 (170)	9.14*
Toy/Game	30.51 (119)	0.41 (1)	8.14 (31)	14.86 (151)	129.57***
Program Promotion	17.18 (67)	21.63 (53)	20.21 (77)	19.39 (197)	2.17
PSA	2.56 (10)	1.22 (3)	0.26 (1)	1.38 (14)	7.57*
Other	37.44 (146)	56.33 (138)	52.49 (200)	47.64 (484)	27.29***
TOTAL	100.00 (390)	100.00 (245)	100.00 (381)	100.00 (1016)	

Note. Chi-square test for the differences in type of advertisements across seasons; * $p < .05$, *** $p < .001$.

As can be seen above, statistically the proportion of food and beverage ads differed across seasons: 12.31% of all ads in the spring, 20.41% in the summer, and 18.90% in the winter ($\chi^2 (2) = 9.14, p < .05$).

The second research question aimed to identify the most frequent food types advertised during TV programs watched by children. Sweets and nonalcoholic beverages accounted for 47.65% ($n = 81$) of the total number of food ads (170). Interestingly, not a single ad was aired for fruit and vegetables. Table 3 shows the types of food products advertised, both within each season and overall.

Table 3. Food Products of the Advertisements.

Food product	Spring % (N)	Summer % (N)	Winter % (N)	Overall % (N)	χ^2
Dairy	14.58 (7)	4.00 (2)	4.17 (3)	7.06 (12)	5.78
Meat	0.0 (0)	0.0 (0)	5.56 (4)	2.35 (4)	5.58
Bread/Pasta	2.08 (1)	0.0 (0)	6.94 (5)	3.53 (6)	4.59
Breakfast fast food	4.17 (2)	2.00 (1)	2.78 (2)	2.94 (5)	0.41
Fruit and vegetables	0.0 (0)	0.0 (0)	0.0 (0)	0.00 (0)	
Salty snacks	0.0 (0)	10.00 (5)	4.17 (3)	4.71 (8)	5.54
Sweets	31.25 (15)	34.00 (17)	26.39 (19)	30.00 (51)	0.86
Fast foods	2.08 (1)	6.00 (3)	6.94 (5)	5.29 (9)	1.43
Convenience foods	4.17 (2)	0.0 (0)	0.0 (0)	1.18 (2)	5.14
Nonalcoholic beverages	10.42 (5)	30.00 (15)	13.89 (10)	17.65 (30)	7.68*
Alcoholic beverages	2.08 (1)	4.00 (2)	5.56 (4)	4.12 (7)	0.88
Water	10.42 (5)	0.0 (0)	1.39 (1)	3.53 (6)	9.49**
Restaurants	4.17 (2)	0.0 (0)	0.0 (0)	1.18 (2)	5.14
Supermarkets	8.33 (4)	2.00 (1)	11.11 (8)	7.65 (13)	3.51
Other	6.25 (3)	8.00 (4)	11.11 (8)	8.82 (15)	0.91
TOTAL	100.00 (48)	100.00 (50)	100.00 (72)	100.00 (170)	

Note. Chi-square test for the differences of type of food advertisements across seasons; * $p < .05$, ** $p < .01$.

As shown in Table 3, the proportion of sweets and nonalcoholic beverages was 42% in the spring, 64% in the summer, and 40% in the winter. This variation seems to have been driven by seasonal differences in advertising for nonalcoholic beverages ($\chi^2 (2) = 7.68, p < .05$).

Research question 3 aimed to identify the most frequent appeals used in the food advertisements. The two most frequent product appeals were flavor/taste/smell/texture (emphasizing the sensory characteristics of the product, 33.53%, $n = 57$) and newness (emphasizing the introduction of the product or flavor, 27.06%, $n = 46$); and the two most frequent emotional appeals were mood alterations (suggesting happiness or relief, 18.24%, $n = 31$) and achievement/enablement (emphasizing the attainment of a goal, 14.71%, $n = 25$). The category other arguments was also frequent (22.94%, $n = 39$). Patterns of product and emotional appeals remained the same across seasons; however, the product appeal newness had greater presence in the summer (42%, $\chi^2 (2) = 9.60, p < .01$), and the emotional appeal achievement/enablement had lower presence in the winter (6.94%, $\chi^2 (2) = 6.20, p < .05$).

The fourth research question sought to identify the amount of food-related content appearing in the programs watched by children. The 25 programs comprised 3,158 30-second time slots—about 25 hours of program content (7.31% of the slots were less than 30 seconds). Overall, 28.37% (n = 896) of the time slots showed the presence of food; that is, some type of food product was on the screen for one quarter of the time of all program content. This amount remained fairly constant across seasons: 26.39% (n = 280) in the spring, 28.76% (n = 262) in the summer, and 29.85% (n = 354) in the winter ($\chi^2 (2) = 3.39, p = .18$).

The fifth question inquired about the most frequent types of food products appearing in TV programs watched by children. Table 4 shows the proportion of time slots that showed foods, categorized as water, soda, sugary drink, fruit, snack, and other. Both overall and across seasons, the most frequent type of food was other, that is, food items—either single or grouped—that were not in any category of interest in this project (water, soda, sugary drink, fruit, or snack).

Table 4. Types of Food Products in 30-Second Slots of the TV Programs.

Food product	Spring % (N)	Summer % (N)	Winter % (N)	Overall % (N)	χ^2
Water	4.64 (13)	5.34 (14)	2.26 (8)	3.91 (35)	4.40
Soda	1.07 (3)	1.53 (4)	0.28 (1)	0.89 (8)	2.78
Sugary drink	1.43 (4)	3.44 (9)	1.98 (7)	2.23 (20)	2.67
Fruit	15.71 (44)	9.16 (24)	7.06 (25)	10.38 (93)	13.17**
Snack	11.07 (31)	13.36 (35)	9.60 (34)	11.16 (100)	2.14
Other	82.50 (231)	84.73 (222)	85.88 (304)	84.49 (757)	1.38
TOTAL	280	262	354	896	

Note. Percentages do not add up to 100% because coders could identify between one and six food products in any single 30-second slot. Chi-square test for the differences of food product across seasons; ** $p < .01$.

Regarding the five categories (water, soda, sugary drink, fruit, or snack) of interest in this research project, fruit and snacks tended to appear in about the same proportion: close to 11% of the time. These percentages remained similar across seasons, except fruit had a greater presence (16%) in the spring ($\chi^2 (2) = 13.17, p < .01$). The last research question asked about the extent to which eating behaviors are portrayed in TV programs watched by children. Overall, at least one character engaged in an eating behavior for one fifth of the time (20.42%) in which food was present in the content of the programs. This proportion was higher in the spring (27.50%) than in the summer (16.03%) and the winter (18.08%) ($\chi^2 (2) = 12.94, p < .01$).

Discussion

The purpose of this study was to characterize the amount of food content appearing in both TV programs and TV advertisements seen by Peruvian children. The underlying argument was that Peruvian children may receive a double dose of food messages when they watch their favorite TV programs. Peru is short of research about the characteristics of food ads (but see CONCORTV, 2012), and the health literature offers little knowledge about the food content inserted in the story lines of programs children watch on television. The health literature holds many studies reporting content analyses of TV advertisements (e.g., Folta et al., 2006; Fosu et al., 2012; Gilmore & Jordan, 2012; Guran et al., 2010; Kelly et al., 2010; Powell et al., 2007; Warren et al., 2008), but studies that analyze the content of programs themselves regarding food and beverages are difficult to find (for exceptions, see Greenberg et al., 2009; Scully et al., 2014). This exploratory study aimed to fill this gap in the literature.

It found that 17% of the commercials were for food and beverages, which is close to what Kelly et al. (2010) found (18%) in their 11-country research project. However, that study (Kelly et al., 2010) reported that 11% of total TV ads in Brazil, the only South American country, were for food products, so the proportion in Peru was greater than that in Brazil. Similarly, this study recorded a greater proportion than did an earlier governmental report (CONCORTV, 2012) indicating that 13% of commercials targeting Peruvian children and adolescents in the summer of 2011 were for food and beverages. Differences between this study's results and those in the report may be due to methodological decisions (Neuendorf, 2002, 2009). In synthesis, this study's findings imply that children would be exposed to about five food and beverage advertisements per hour of TV watching—an alarming number, considering that children watch a large amount of TV daily (Busse & Díaz, 2014).

Almost half (48%) of all food advertisements were found to be for sweets and nonalcoholic beverages, and not a single ad was devoted to fruit or vegetables. This means TV ads frequently showed children not only sodas, sugary drinks, and energy drinks, but also chocolate, gum, ice cream/frozen donuts, cake, pies, and cookies. Meanwhile, advertisements for fruit or vegetables were completely absent. These findings have clear policy implications, as policy makers could promote healthy lifestyles more by placing ads that promote consumption of fruit and vegetables. In comparison, Gilmore and Jordan (2012) found that bread/cereals and dairy products were the most frequent food products advertised on ads running during U.S. children's programming, and that fruit and vegetables were present in about 21.4% of the food commercials. Unlike this study, in which coders identified only one food type (the most prominent) per ad, coders in Gilmore and Jordan's (2012) study could identify as many food products as the ad showed. This difference in the coding process may explain why they found fruit and vegetables and this research did not.

Further, the instrument used here was developed for U.S. TV content (Warren et al., 2008) to code for the product and emotional appeals in the food commercials. Replicating most of this coding scheme, this study found that flavor/taste/smell/texture and newness were the most frequent product appeals, while mood alterations and achievement/enablement were the emotional appeals used oftenest in the ads. Because pairing these types of appeals with unhealthy foods may persuade children to eat such food items (Fosu et al., 2012), these findings are concerning. Media literacy efforts could help mitigate any negative effects resulting from use of these appeals. These findings somewhat match Warren et al.'s

(2008) finding that taste/ flavor, mood alterations, nutritional content, newness and value for money made up 73% of all product and emotional appeals in their analyzed food ads. In this study, the category other was frequent and included appeals such as "national pride," which is used to promote Inca Kola, a popular Peruvian soda.

Besides analyzing advertising, this study identified the amount of content featuring food items in children's TV programs. One important finding is that most of the food-related content did not include the fruit, snacks, water, sugary drinks, and sodas that were the items of interest in this research project. When food was present on TV, fruit and snacks were shown about 11% of the time. Interestingly, fruit's presence was slightly greater in the spring.

Motivated by social cognitive theory (Bandura, 2004) and research on narratives (Green & Brock, 2002; Kreuter et al., 2007), the study aimed to identify the extent to which eating behaviors, regardless of their consequences, were depicted on TV shows watched by children. It found that food was present in one quarter of all the program content time, and that eating behaviors were present for one-fifth of the time in which food was shown in the program content. This alone is high enough to raise concern, insofar as media content may influence cognitions such as perceived normative pressure (Bleakley et al., 2011). These findings imply that children would be exposed to approximately 15 minutes of food-related content and about 3 minutes of food-related behaviors per hour of TV watching—again, an alarming finding, considering the great amount of TV children watch every day (Busse & Díaz, 2014).

Taking the results from the analysis of shows and advertisements together, this study suggests that when watching popular shows, children may be exposed to a double dose of messages about food: Overall, 17% of all the commercials in this sample were for food and beverages, and 28% of all the program content in the sample included some type of food product.

Further research is suggested to examine the data at the program level and determine the relative amounts of food presence in specific shows, especially those that may differentiate the preferences of boys and girls. Moreover, and to support claims about observational learning (Bandura, 2004; Baranowski et al., 2002), it would be ideal to analyze data gathered from the content of the programs to assess the presence of rewards and punishments for eating behaviors. Greater occurrence of rewards than punishments would suggest that children may model eating behaviors seen on their favorite shows.

Clear policy recommendations can be suggested based on these results. First, policy makers should regulate not only the proportion of food advertisements run on TV, but also the amount of program content that can show food, for example, by regulating product placement in the story lines of the shows. The governments of Norway, Sweden, and the United Kingdom have taken steps to regulate the promotion of unhealthy foods, such as reducing food ads at times when children are watching TV (Harris, Pomeranz, Lobstein, & Brownell, 2009; Matthews, 2008). Second, policy makers can educate parents on media literacy, enabling parents to reduce negative effects by teaching their children about the persuasive intent of TV food advertising. In this study's sample, ads' appeals engaged both attributes of the products and emotions in their persuasive intent, emphasizing the sensory characteristics of the food products or the positive feelings that would result from consuming the product. Media literacy efforts implemented in

school settings have shown, for example, that educating children and their parents about budgeting TV viewing time and being more selective about their TV viewing time can reduce children's body mass index (Robinson, 1999). Such media literacy efforts can likewise include components that teach children and parents how to resist the persuasive appeals of food advertising.

Limitations

Results and conclusions from this study should be taken with caution. In this attempt to analyze Peruvian TV programs that children watch on public and cable channels, it was not possible to fully code all episodes of each of the children's favorite TV shows. Manganello et al. (2008) suggested coding from five to seven episodes per program to fully assess the content for behavioral and character variables pertaining to sex. A similar decision may be proposed for the analysis of food content in TV shows. Furthermore, most of the programs in this study were favored by children from Lima who participated in the focus groups of the formative research, whose preferences may not reflect the preferences of all children in Peru.

Though this study was exploratory in nature, it suggests paths for future research and overall proposes the argument that children may be receiving a double dose of food messages when they watch TV. Policy makers and parents should take action to reduce any negative effects exposure to TV food messages may have on children in Peru.

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